

Date: Monday, 6/5/2006 7:26:57 AM
 User: Kim Johnston

Process Sheet

Customer :	CU-DAR001 Dart Helicopters Services	Drawing Name :	ASPIRATOR
Job Number :	27331		
Estimate Number :	12424		
P.O. Number :	NIA	Part Number :	D2000109
This Issue :	6/5/2006	S.O. No. :	NIA
Prsht Rev. :	NC	Drawing Number :	D2000-109 REV A1
First Issue :	NIA	Project Number :	N/A
Previous Run :	NIA	Drawing Revision :	A1
	Type :	Material :	NIA
	PURCHASED PARTS	Due Date :	7/29/2006
Written By :	Qty:		10 ^u
Checked & Approved By :	Um:		Each
Comment :	Est Rev:A New Issue 06-05-31 JLM		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	PG	PURCHASING
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**Comment:** PURCHASING

Issue P/O: 1406 For D2000-109

Spin as per Dwg D2000-109

Possible Supplier: SIEG

Material release note is required

C Loe 105/06 (10)

2.0	D2000109S	Aspirator- Outer Flange
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**Comment:** Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

3.0	PACKAGING 1	PACKAGING RESOURCE #1
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**Comment:** PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure material certification is attached

C Loe 114/06 (10)

4.0	QC6	DIMENSIONAL CHECK
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**Comment:** DIMENSIONAL CHECK

C Loe 114/06 (10)

5.0	SMALL FAB 1	SMALL & MEDIUM FAB RESOURCE 1
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**Comment:** SMALL & MEDIUM FAB RESOURCE 1

Drill as per Dwg D2000

Deburr

SAD 06-06-11 (10)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☐ No ☒ DQA: LS Date: 06/06/29

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

Date: Monday, 6/5/2006 7:26:57 AM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: ASPIRATOR

Job Number: 27331

Part Number: D2000109

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

QC5

INSPECT WORK TO CURRENT STEP



Job 06.22 (10)

Comment: INSPECT WORK TO CURRENT STEP

7.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location:

06/06/28 (10)

8.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Inspection Level 21

06/04/29 (10)

Job Completion



h 06.06.28

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

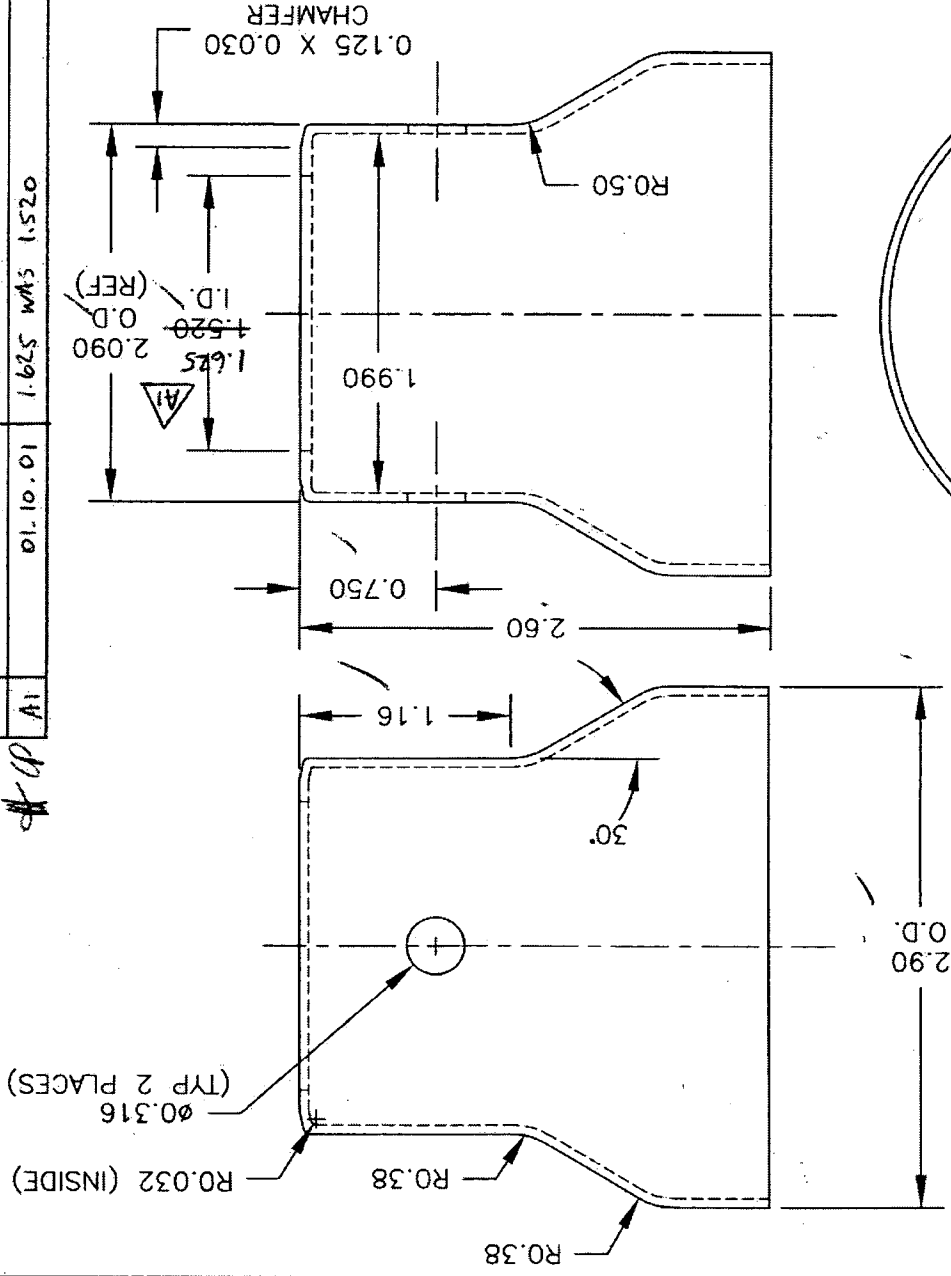
NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

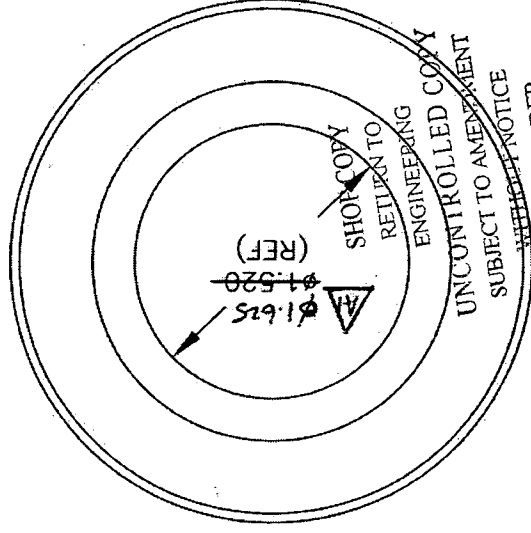
DART



DESIGN	JB	DRAWN BY	CP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	CP	APPROVED	CP	DRAWING NO.	D2000-109
DATE	00.11.13	TITLE	ASPIRATOR		
		SCALE	1:1		
A	00.11.13	AS MANUFACTURED			
A1	01.10.01	1.625 WAS 1.520			



RELEASED
00.11.20



NOTES:
THIS PART MUST MATE WITH D2000-111
MATERIAL: 1100-0 ALUMINUM (00-A-250/1) 0.063 THICK
FINISH: NONE
TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

WORK ORDER
NO. 27331

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COPPER AND BRASS SALES

MATERIAL TYPE

ALUMINUM ALLOYS WITH LOW BERYLLIUM

PRODUCT DESIGNATION

2014 2024 2224 2324 7050 7075 7150 7175 7475
ALUMEC 89 ALUMEC 99 QC-7

"WARNING"

SMALL CHIPS, FINE TURNINGS AND DUST MAY IGNITE READILY. EXPLOSION POTENTIAL MAY BE PRESENT WHEN: DUST OR FINES ARE DISPERSED IN THE AIR; FINE, DUST OR MOLTEN ALUMINUM ARE IN CONTACT WITH CERTAIN METAL OXIDES; OR, CHIPS, FINES, DUST OR MOLTEN ALUMINUM ARE IN CONTACT WITH WATER OR MOISTURE. KEEP AWAY FROM IGNITION SOURCE. USE EXPLOSION-PROOF VENTILATION. KEEP MATERIAL DRY.

THIS PRODUCT CONTAINS BERYLLIUM AND COPPER. INHALING BERYLLIUM DUST OR FUMES MAY CAUSE CHRONIC BERYLLIUM DISEASE (CBD), A SERIOUS CHRONIC LUNG DISEASE IN SOME INDIVIDUALS. BERYLLIUM IS A CANCER HAZARD; OVER TIME CBD AND CANCER CAN BE FATAL, TARGET ORGAN IS PRIMARILY THE LUNG. INHALING LARGE AMOUNTS OF COPPER, MAGNESIUM OXIDE, MANGANESE OXIDE, AND ZINC OXIDE FUMES OR DUST MAY CAUSE METAL FUME FEVER WITH FLU-LIKE SYMPTOMS. CHRONIC OVEREXPOSURE TO COPPER MAY CAUSE THICKENING OF THE SKIN; AND SKIN, TEETH, AND HAIR DISCOLORATION. CHRONIC OVEREXPOSURE TO MANGANESE DUST CAN CAUSE CENTRAL NERVOUS SYSTEM DAMAGE, SCARRING OF THE LUNGS AND REPRODUCTIVE HARM IN MALES. TARGET ORGAN IS PRIMARILY THE LUNG, BUT REPEATED HIGH EXPOSURE CAN ALSO AFFECT THE LIVER. CHRONIC OVEREXPOSURE TO IRON OXIDE DUST/FUME MAY CAUSE LUNG SIDEROSIS. CHRONIC OVEREXPOSURE TO SILICON DUST CAN CAUSE CHRONIC BRONCHITIS. OVEREXPOSURE TO AMORPHOUS SILICA CAN CAUSE DRYING OF THE MUCOUS MEMBRANES OF THE EYES, NOSE, AND THROAT.

THIS PRODUCT ALSO CONTAINS NICKEL AND CHROMIUM COMPOUNDS. INHALATION OF NICKEL DUST OR FUME MAY RESULT IN INFLAMMATION OF THE RESPIRATORY TRACT AND CAUSE NASAL AND/OR LUNG CANCER. NICKEL HAS BEEN IDENTIFIED AS A POTENTIAL HUMAN CARCINOGEN. EXPOSURE TO CHROMIUM DUST OR FUME MAY CAUSE METAL FUME FEVER WITH FLU-LIKE SYMPTOMS AND KIDNEY AND LIVER DAMAGE. UNDER HIGH TEMPERATURES, HEXAVALENT CHROMIUM MAY BE PRODUCED, IF IN THE INSOLUBLE FORM, IT IS A CONFIRMED HUMAN CARCINOGEN. (CALIFORNIA PROPOSITION 65).

IF COATED WITH OIL, MAY CAUSE SKIN IRRITATION/DERMATITIS BY CONTACT. WELDING FUME IS LISTED AS A POSSIBLE CARCINOGENIC TO HUMANS.

READ THE ALUMINUM/ALUMINUM ALLOYS MATERIAL SAFETY DATA SHEET(MSDS) ON FILE WITH YOUR EMPLOYER BEFORE WORKING WITH THIS MATERIAL

- * If processing or recycling produces particulate, use exhaust ventilation or other controls designed to prevent exposure to workers. Examples of such activities include melting, welding, grinding, abrasive sawing, sanding and polishing. Any activity which abrades the surface of this material can generate airborne particulate. Use respiratory protection (P100, quantitative fit testing required) if exposures exceed the permissible limits.
- * The Occupational Safety and Health Administration (OSHA) have set mandatory limits on occupational exposures.
- * Aluminum, in solid form and as contained in finished products presents no special health risk.
- * Sold for manufacturing purposes only. This product can be recycled; contact your sales representative.

The Occupational Safety and Health Administration require employers to provide training in the proper use of this product.

For additional information, call or write to Copper and Brass Sales, 22355 West Eleven Mile Road, Southfield, MI 48034, telephone 248-233-5600, or visit our web site @ www.copperandbrass.com.

1100 Aluminum Coil and Sheet

1100 Aluminum Coil and Sheet

Alloy Attributes

- Commercially pure aluminum
- Low strength, but excellent corrosion resistance
- Unmatched in workability
- Good welding, brazing, and soldering

Tempers

- 0 - Annealed
- H14 - Strain hardened and stabilized to a 1/2 hard temper

Shapes / Forms

- Coil and Sheet

Sizes/ Tolerances

- Coil Thickness:

0: .016, .020, .032, .040, .050, .063, .080, .090, .125, .190

H14: .016, .020, .025, .032, .040, .050, .063, .125, .190

- Sheet Thickness:

0: .020, .025, .032, .040, .050, .063, .080, .090, .125, .190

H14: .016, .020, .025, .032, .040, .050, .063, .090, .125, .190, .249

- Sheet Width and Length: various sheet sizes; 36" and 48" wide coil

- Tolerances: (Please note - all domestic mills produce as half commercial tolerance on the minus side). Example- Alcoa .063 (48" wide) is $\pm .000-.0035$

Material Thickness	36" Wide	48" Wide
.016	$\pm .001$	$\pm .0015$
.020/.025	$\pm .0015$	$\pm .002$
.032	$\pm .002$	$\pm .0025$
.040	$\pm .0025$	$\pm .0035$
.050, .063	$\pm .003$	$\pm .0035$
.071	$\pm .0035$	$\pm .004$
.080, .090	$\pm .0035$	$\pm .0045$
.100, .125	$\pm .0045$	$\pm .006$

ALU ALU
 @
 SLETS MPN
 (601) 530 - 7490

- Mexinox
- Thyssen-Krupp Nirosta
- Allegheny-Ludlum

Mechanical Properties

- Tensile (ultimate) strength, yield strength, elongation

Minimum
Tensile

70,000 PSI

Minimum
Yield

25,000 PSI

%
Elongation

40%

Rockwell
Hardness

B95 Max

Physical Properties

- Coefficient of Thermal Expansion: 9.4
- Electrical Conductivity: 74%
- Coefficient of Thermal Expansion: 10.3
- Weldability: Very good
- Formability: Good

Nominal Chemical Composition

- 0.03% maximum C
- 2% max Mn
- .75 % max Si
- 16-18% Cr
- 10-10.5% Ni
- 2-2.5% Mo
- Balance Fe

.160, .190

+-0.007

+-0.009

.249

+-0.012

+-0.014

Product Surface Finishes

- Mill Finish

Dedicated Suppliers

- Alcoa
- Commonwealth Aluminum
- Offshore suppliers (various)

Mechanical Properties

- Tensile (ultimate) strength, yield strength, elongation
- 0 Temper

Tensile	Modulus of Elasticity	Yield	Shear Strength	% Elongation	Brinell Hardness
13,000 KSI	10	5,000 KSI	9,000 PSI	35%	23

- H14

Tensile	Modulus of Elasticity	Yield	Shear Strength	% Elongation	Brinell Hardness
18,000 KSI	10	17,000 KSI	11,000 PSI	9%	32

Physical Properties

- Coefficient of Thermal Expansion: 13.1×10^{-6} in/in/°F
- Thermal Conductivity: 1540 BTU/FVHr/F²/°F
- Nominal Density: .098 lb./in³
- Electrical Conductivity: 59% IACS

Nominal Composition

- .10% Cu
- 99.0% minimum aluminum